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RE: Application Serial No.: 08/913,518

Applicants: JEAN-PAUL DEBALME, ET AL.

RCE Filing JANUARY 14, 2003

Date:

For: PROCESS AND DEVICE FOR THE
MANUFACTURE OF A COMPOSITE MATERIAL

Office: Office of PCT Legal Administration

PCT Legal TUNG, B

Examiner:

SIR:

Attached hereto for filing are the following papers:

**RENEWED PETITION UNDER 37 C.F.R. §1.182
ENGLISH TRANSLATION OF THE INTERNATIONAL APPLICATION
AS REQUIRED BY 35 U.S.C. §371(c)(2)
COURTESY COPIES OF PETITION UNDER 37 C.F.R. §1.182 FILED AUGUST 12, 2003,
DECLARATION UNDER 37 C.F.R. §1.132 FILED AUGUST 12, 2003
W/ A PAGE FROM A FRENCH DICTIONARY
AND THE DATE-STAMPED FILING RECEIPT**

Our check in the amount of \$0.00 is attached covering any required fees. In the event any variance exists between the amount enclosed and the Patent Office charges for filing the above-noted documents, including any fees required under 37 C.F.R. 1.136 for any necessary Extension of Time to make the filing of the attached documents timely, please charge or credit the difference to our Deposit Account No. 15-0030. Further, if these papers are not considered timely filed, then a petition is hereby made under 37 C.F.R. 1.136 for the necessary extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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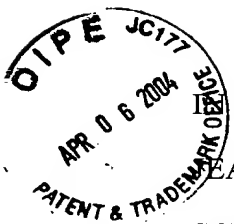
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IN THE UNITED STATES PATENT & TRADEMARK OFFICE



RE APPLICATION OF :
JEAN-PAUL DEBALME, ET AL. : PCT LEGAL EXAMINER: TUNG, B
SERIAL NO: 08/913,518 :
RCE FILED: JANUARY 14, 2003 : OFFICE OF PCT LEGAL ADMINISTRATION
FOR: PROCESS AND DEVICE FOR THE :
MANUFACTURE OF A COMPOSITE
MATERIAL

RENEWED PETITION UNDER 37 C.F.R. §1.182

Mail Stop PCT
Commissioner for Patents
Office of PCT Legal Administration
Alexandria, VA 22313-1450

SIR:

Pursuant to the PTO communication dated February 6, 2004, Applicants hereby submit the enclosed English translation of the international application as required by the PCT Legal Examiner, and request reconsideration of the Petition filed August 12, 2003, on the merits.

REMARKS

Submitted herewith are a corrected version of English translation of the international application as required by the PCT Legal Examiner in the PTO communication dated February 6, 2004, as well as a copy of the declaration and Petition filed August 12, 2003. Applicants therefore respectfully request reconsideration of support for the amendments filed August 15, 2002 to the English translation. Specifically, the newly submitted English translation translates the French terms "plaque" and "plaques" as discussed in the declaration

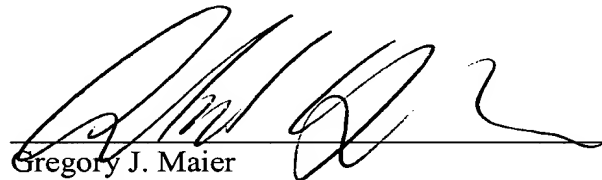
Application No. 08/913,518
Renewed Petition Under 37 C.F.R. §1.182

to “plate” and “plates” (see Abstract, last sentence; page 2, line 19; page 3, lines 21 and 26; page 4, line 10; page 7, lines 31 and 35; page 8, line 35; page 10, lines 24 and 26; page 11, lines 26, 27 and 29; page 13, lines 21, 32 and 35; page 14, lines 35 and 36; page 17, line 21).

In view of the discussion and submissions above, it is respectfully requested that the Petition under 37 C.F.R. §1.182 be granted.

Respectfully submitted,

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PATENT

PROCESS AND DEVICE FOR THE MANUFACTURE
OF A COMPOSITE MATERIAL

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Inventors: Jean-Paul DEBALME
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ABSTRACT

The invention relates to the manufacture of a composite product which consists:

- in continuously depositing onto a moving substrate glass threads of which at least 80 % by weight thereof are commingled threads consisting of glass filaments and of filaments of thermoplastic organic material which are intimately blended, the quantity of glass deposited representing more than 40 % by weight of the total quantity of material deposited in the form of glass threads and of organic material,

- in transferring this glass threads-organic material combination into a number of zones where the said combination is heated, compressed and cooled, the heating and/or the cooling of the said combination being simultaneously accompanied by its compression,

- in cutting up the said combination in the form of plates or in winding it onto a rotating drum.

PROCESS AND DEVICE FOR THE MANUFACTURE OF A COMPOSITE MATERIAL

The present invention relates to a process and
5 to a device for making use of the said process for the
manufacture of a composite material, formed by the
association of reinforcing fibres, such as glass
fibres, and of a thermoplastic organic material.

There are already numerous processes which make
10 it possible to associate glass fibres and a
thermoplastic organic material. The glass fibres may be
in the form of a mat of continuous threads or of
chopped threads and/or of fabrics; the organic material
may be in the liquid form or in the solid state in the
15 form of powder, film, sheet or of threads. The choice
of the form in which the glass fibres and the organic
material are associated depends on the configuration of
the article to be produced and on the properties which
are required for the said article.

20 Also, when the configuration of the article is
relatively simple and when its mechanical properties
must be high, the reinforcement chosen is in most cases
in the form of fabric. The utility certificate
FR-2 500 360 illustrates the use of reinforcement of
25 this type: the manufactured articles are flat panels or
curved articles which are produced by hot pressing of
superposed layers of fabrics of, for example, glass
fibres; the thermoplastic organic material associated
with the glass thread fabrics being in the filamentary
30 form. These thermoplastic threads may be warp or weft
threads or both at the same time. During the hot
pressing these threads melt and, on cooling, will bind
the glass fabric layers together. The composite
laminates thus produced are characterized by a high
35 content of reinforcing fibres.

The process for the manufacture of these
laminates is a noncontinuous process, according to
which a number of layers of fabrics are superposed and
the combination of the said layers is then heated while
40 they are being compressed in a static press.

More recently, patent US-A-5 227 236 has proposed an improvement to the process described above: the improvement consists in the use of mixed or, preferably, commingled threads which are sized with a dispersion or an emulsion of a thermoplastic polymer. Mixed threads should be understood to mean threads obtained by the simultaneous assembling and reeling of reinforcing threads such as glass threads and thermoplastic organic threads; commingled threads should be understood to mean threads obtained by the assembling and reeling of a multiplicity of reinforcing filaments and of thermoplastic organic filaments, the said filaments having previously been separated by mechanical means from their original threads. The melting point of the polymer employed for sizing these threads is lower than that of the organic filaments. Thus sized, these threads are employed in the form of fabrics. By virtue of this improvement the time needed to produce a plate by hot pressing is found to be reduced. However, this, too, is a noncontinuous process.

For the production of composite articles of complex configuration it is known to employ a reinforcement which has the advantage of being in the form of a continuous thread which can be moved with the thermoplastic organic material under the effect of the pressure exerted during the moulding operation.

The manufacture of such a product which is suitable for moulding is described, for example, in patent US-A-4 277 531. According to this patent, a mat of continuous glass threads is, in a first step, needled in order to give it the cohesion needed for its being handled; in a second step, on a manufacturing line, two strips of mat which has thus been needled are brought along parallel paths to a hot-pressing device, where they are combined. The lower face of the bottom strip rests on a film of thermoplastic organic material; the upper face of the topmost strip is also

covered with a film of the same kind. Just before the mat strips are combined, a device deposits a layer of thermoplastic material in the liquid state. This combination is simultaneously heated and compressed so
5 as to ensure at least partial melting of the films of organic material and, after cooling, the bonding of the threads of which the mats consist.

This process has the advantage of permitting the continuous manufacture of a sheet of a composite
10 material which is ready to be moulded. However, while the product thus obtained is easily mouldable, the content of reinforcing fibres in the final article remains limited.

The subject of the present invention is a
15 process which makes it possible to manufacture continuously a composite product in which the content of reinforcing fibres is higher than that attained by the continuous processes known hitherto.

The subject of the present invention is a
20 process which makes it possible to manufacture continuously a composite product in plate form, at a rate which is at least as high as that of the best continuous processes known in this field.

Another subject of the present invention is a
25 process which makes it possible to manufacture continuously a composite product in plate form, which combines the mouldability characterizing the products which contain nonwoven reinforcements and which gives the product obtained by moulding the level of
30 mechanical properties that characterizes products containing woven reinforcements.

The objectives of the invention are attained by virtue of a process which consists:

- in continuously depositing onto a moving
35 substrate glass threads of which at least 80 % by weight thereof are commingled threads consisting of glass filaments and of filaments of thermoplastic organic material which are intimately blended, the

quantity of glass deposited representing more than 40 %
by weight of the total quantity of material deposited
in the form of glass threads and of organic material,

- in transferring this glass threads-organic
5 material combination into a number of zones where the
said combination is heated, compressed and cooled, the
heating and/or the cooling of the said combination
being simultaneously accompanied by its compression,

- in cutting up the said combination in the form
10 of plates or in winding it onto a rotating drum.

Commingled threads are intended to mean threads
in which glass filaments and filaments of thermoplastic
organic material are intimately blended. These threads
can be obtained by mechanical means as described, for
15 example, by patent US-A-4 818 318. According to this
patent the reinforcing threads and the thermoplastic
threads are extracted from their respective windings
and then the filaments of which they consist are
separated in the form of two sheets of the same width.
20 These sheets are next brought into contact with one
another to form only a single sheet, the two kinds of
filaments being alternated as uniformly as possible.
All the filaments thus blended are combined into a
single thread.

25 Commingled threads are also intended to mean
those which are directly obtained during the
manufacture of thermoplastic organic filaments and of
glass filaments. Processes permitting the manufacture
of such a thread are described, for example, in patent
30 applications EP-A-0 599 695 and EP-A-0 616 055. In
these processes, filaments obtained by extrusion and
mechanical drawing of a thermoplastic organic material
in the molten state are drawn in the form of a sheet
and are blended with a bundle or a sheet of glass
35 filaments (or are sprayed into the said bundle or the
said sheet), the said glass filaments being also in the
course of being drawn. By virtue of this kind of

process a thread within which the various filaments are blended homogeneously is thus obtained directly.

5 A moving substrate is intended to mean a strip of material formed by the combination of threads of glass and of a thermoplastic organic material, for example a strip of fabric formed by glass threads of which at least 80 % by weight thereof are commingled threads as defined above.

10 A moving substrate is also intended to mean a conveyor which carries the glass threads-organic material combination from one point to another of a manufacturing line.

15 According to a first embodiment of the process according to the invention the glass threads and the material which are deposited continuously onto the substrate are exclusively in the form of at least one strip of fabric and/or of knit which are formed at least partially by commingled threads.

20 The fabrics employed within the scope of the invention include commingled threads which may be warp or weft threads, preferably both at the same time. Similarly, the knits employed may consist partially or totally of commingled threads.

25 According to a second embodiment of the invention the material deposited onto the substrate is exclusively in the form of chopped threads.

30 According to a third embodiment the material deposited onto the substrate is exclusively in the form of continuous threads. These threads may be deposited in the direction of movement in the substrate or in the form of superposed loops.

35 According to a fourth embodiment of the invention, at least one strip of fabric and/or of knit which are formed at least partially of commingled threads is deposited onto a substrate and at least one sheet of commingled threads, chopped or continuous, is also deposited, the said sheet(s) being brought into contact with at least one of the faces of the said

strip(s), and then the sheet(s) of threads-strip(s) of fabric and/or knit combination thus formed is heated and is compressed on its two faces before being cooled and cut up.

5 According to a first alternative form of this latter embodiment:

- a) - a sheet of chopped commingled threads is deposited onto a moving conveyor,
- b) - a strip of fabric formed exclusively by
10 commingled threads is deposited onto the said sheet,
- c) - a second sheet of chopped commingled threads is optionally deposited onto the strip of fabric,
- d) - the sheet(s)-strip(s) combination thus formed
15 combination is heated and then into a second zone where the said combination is simultaneously compressed and heated,
- e) - the said combination is then transferred into a third zone in which it is compressed and cooled,
- 20 f) - the said combination thus cooled is cut up at the exit of the third zone.

 According to a second alternative form of this embodiment:

- a) - a first strip of fabric formed exclusively by
25 commingled threads is deposited onto a moving conveyor,
- b) - a sheet of chopped commingled threads is deposited onto this strip,
- c) - a second strip of fabric exclusively formed by commingled threads is deposited onto this sheet,
- 30 d) - a second sheet of chopped commingled threads is optionally deposited onto this latter strip of fabric,
- e) - the strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone
35 where the said combination is simultaneously compressed and heated,
- f) - the said combination is transferred into a third zone in which it is compressed and cooled,

g) - the combination thus cooled is cut up at the exit of the third zone.

According to a third alternative form of this embodiment:

- 5 a) - a first strip of fabric formed exclusively by commingled threads is deposited onto a moving conveyor,
- b) - one or more continuous commingled threads are deposited onto this strip,
- c) - a second strip of fabric formed exclusively by
10 commingled threads is deposited onto the said continuous thread(s),
- d) - one or more continuous commingled threads or a sheet of chopped commingled threads is optionally deposited onto this latter strip of fabric,
- 15 e) - this strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone where the said combination is simultaneously compressed and heated,
- 20 f) - the said combination is transferred into a third zone in which it is compressed and cooled,
- g) - the combination thus cooled is cut up at the exit of the third zone.

Within the scope of the fourth embodiment of
25 the invention and of its alternative forms the width of the sheet(s) of commingled threads which is (are) deposited is preferably equal to the width of the strip(s) of fabric and/or of knit with which it is (they are) combined.

30 When strips of fabric and/or of knit and sheets of chopped or continuous threads are combined, plates are obtained in which the middle part and/or at least one of the surface layers consist of at least one layer of glass threads capable of moving in a mould during
35 the operation of moulding of the said plates.

When a sheet of chopped threads is deposited, it may be obtained from a distributing device situated at the base of a storage hopper for prechopped

commingled threads. It is also possible to obtain this sheet directly from a cutter fed continuously with a multiplicity of rovings of commingled threads extracted from a multiplicity of windings.

5 The layer of continuous commingled threads may be obtained by scattering one or, preferably, more thread(s) with the aid of one or more devices continuously fed with one or more threads extracted from windings.

10 The sheets or the layers of continuously deposited threads are preferably of the same width as the strips of the fabric which are employed.

 In the process according to the invention the weight of glass which is deposited may represent at
15 least half of the total weight of material deposited onto the conveyor.

 The detailed description below will allow the invention and the advantages which it offers to be appreciated better. This description will be
20 illustrated by a number of figures which represent:

- Figure 1: a device which permits a first implementation of the invention,

- Figure 2: a device which permits a second implementation of the invention,

25 - Figure 3: a device which permits a third implementation of the invention,

- Figure 4: a graph on which are plotted the mechanical characteristics of composite products obtained according to known processes and according to
30 the invention.

 These various devices are described by way of examples and cannot in any way constitute a limitation of the invention.

 Figure 1 shows diagrammatically a line for
35 production of composite plates which includes upstream at least one multistorey creel 10 on which is placed a multiplicity of windings of commingled threads 11. The threads extracted from these windings are guided and

combined by various members before entering a cutter 12. The chopped threads are collected and transferred by means of a conveyor belt 13 into a storage silo 14.

5 A capacitor with a perforated drum 15, joined by a conduit 16 to the base of the silo 14, feeds chopped threads to a first coater shaft 17 as commonly employed in the textile industry.

This shaft 17, equipped with a metering device, distributes the chopped threads in the form of a first
10 sheet 18 onto a moving conveyor 19.

Downstream of the shaft 17 and above the conveyor 19 is installed a device with a small barrel 20 provided with two spindles which are free in rotation and support two rolls of fabrics 21 and 22,
15 made up of commingled threads. A strip of fabric 23, extracted from the roll 21, is applied by means of a device 24 onto the sheet 18. When the roll 21 is finished, the device 20 pivots by 180° in order to continue the unwinding of a strip of fabric from the
20 roll 22. To facilitate changing the roll, a fabric-accumulator and a device ensuring the positioning of the strip 23 (which are not shown) are fitted between the small barrel 20 and the device 24. These devices are shown in Figure 3, which itself illustrates another
25 embodiment of the invention, and are commented on below.

Downstream of the device 20 is fitted a second shaft 25, also fed with chopped threads by virtue of a capacitor with a perforated drum 26 connected by a
30 conduit 27 to the silo 14. This shaft 25, equipped with a metering device, distributes the chopped threads in the form of a second sheet 28 onto the strip of fabric 23. This sheet is compressed by means of a device 29 placed at the exit of the said shaft.

35 This "sandwich" formed by a strip of fabric of commingled threads, taken between two sheets of commingled chopped threads, is introduced into a preheating oven 30. This oven allows this sandwich to

be heated to a temperature which is higher than the melting temperature of the thermoplastic organic material of which a portion of the filaments blended with the glass filaments is formed. This heat treatment
5 can be carried out, for example, by means of hot air.

Thus heated, the sandwich then enters a press 31 of a known type, for example such as that described in patent US-A-4 277 531.

This press essentially includes two belts 32
10 and 33, driven respectively by rolls 34, 35 in the case of the first one and 36 and 37 in the case of the second one. The rolls 34 and 36 are heated; the rolls 35 and 37 are cooled. It also includes, between these two pairs of rolls, two zones in which the sandwich is
15 compressed on its two faces and is driven. In the first zone 38 the means of pressing contribute to the heating of the sandwich to a temperature which is higher than the melting temperature of the thermoplastic organic material; in the second zone 39 the means of pressing
20 perform a cooling function which is supplemented by the action of the rolls 35 and 37.

A cooled, rigid strip comes out of the press 31 and is cut up by an automatic guillotine device 40 in the form of plates 41.

25 Figure 2 shows diagrammatically a line for production of composite plates according to a second embodiment of the invention. As in the preceding embodiment, a creel 10, on which a multiplicity of windings of commingled threads 11 is placed, is fitted
30 at the beginning of the line. These threads also feed a cutter 12. The threads chopped by this means are collected and transferred by a conveyor belt 42 to the top of a hopper 43 placed above a moving conveyor 19.

Upstream of this conveyor is fitted a device
35 with a small barrel 44 provided with two spindles which are free in rotation and support two rolls of fabric 45 and 46, which are made up of commingled threads. A strip of fabric 47, extracted from the roll 46, is

applied onto the conveyor 19. The hopper 43, which enables a sufficient quantity of threads to be stored in order to work on the cutter without interrupting the manufacture, is used to feed, through the intermediacy
5 of conveyor belts 48 and 49, a coater shaft 50. The latter delivers a sheet of chopped threads 51 onto the moving belt 47.

Downstream of the shaft 50 is fitted, above the conveyor, a second device with a small barrel 52
10 provided with two spindles which are free in rotation, which support two rolls of fabric 53 and 54, also made up of commingled threads. A strip of fabric 55 is extracted from the roll 53 and is applied onto the sheet 51 at the exit of the shaft 50, by virtue of a
15 device 56. As in the case of the first embodiment, a fabric-accumulator and a device ensuring the positioning of the strip of fabric (which are not shown) are fitted between the small barrel 44 and the upstream part of the conveyor 19 and between the small
20 barrel 52 and the device 56 (see Figure 3).

This "sandwich" made up of a sheet of chopped threads taken between two strips of fabric is, as previously, introduced into a preheating oven 30 before entering a press 31 which is identical with that
25 described in the context of the first embodiment of the invention. The rigid plate which comes out of it is cut up by a guillotine device 40 in the form of plates 57.

Figure 3 shows diagrammatically a line for production of composite plates according to a third
30 embodiment of the invention.

As in the embodiments described above, a creel
10 on which is placed a multiplicity of windings 11 of commingled threads is installed upstream of the line. These threads are extracted from the windings 11 and
35 are then guided and combined by various devices to form rovings 58.

The extraction of these threads is carried out by means of three devices 59 which are at the same time

devices for driving and distributing the said rovings. These devices are enclosed in a housing 60 fitted above the upstream part of the conveyor 19.

5 This line also includes two devices with a small barrel 44 and 52 which support rolls of fabric made up of commingled threads fitted, as in the line shown in Figure 2, upstream and downstream of the devices 59 for distributing the rovings.

10 A first strip of fabric 61, consisting of commingled threads, is unwound at constant tension from the roll 46. This strip runs into a fabric-accumulator 62 and then into a rotary frame 63 fitted with a selvage-detector which allows it to be positioned accurately before the said strip comes into contact
15 with the conveyor 19. When the roll 46 is finished, the small barrel 44 pivots in order to place the roll 45 in an unwinding position.

The end of the strip 61 is stopped at the device 64 for the time needed to sew it to the
20 beginning of the strip from the roll 45. During this time the reserve 62 provides the feed of fabric to the line.

A second strip of fabric 65, also consisting of commingled threads, is deposited onto the sheet of
25 rovings 58 which have themselves been deposited onto the strip of fabric 61. This strip 65 is unwound at constant tension from the roll 54; it runs into a fabric-accumulator 66 and then, after a return 67, into a rotary frame 68 equipped with a selvage-detector
30 which enables the said strip to be positioned accurately in relation to the strip 61 and the sheet of rovings 58.

The sandwich 69 made up of the sheet of rovings 58 and the strips 61 and 65 enters a hot air oven 30
35 supported by a perforated and relatively nonadhesive strip 70, for example a PTFE-coated glass grid. When passing through this oven the sandwich 69 is heated to a temperature above the melting temperature of the

thermoplastic organic material. On leaving the oven the sandwich is reduced in volume by being lightly compressed between the rolls 71.

5 As in the preceding embodiments, the sandwich next enters a press 31 equipped with two belts 32 and 33, in which it is heated to a temperature which is higher than the melting temperature of the thermoplastic organic material. Between the rolls 34 and 36, which are heated, and the rolls 35 and 37,
10 which are cooled, this press is equipped with a pair of rolls 72 and 73, which are heated. These rolls also compress the sandwich and promote the removal of the air which is still present therein.

A cooled, rigid strip comes out of the press 31
15 and runs into a device 74 equipped with saws 75 which remove the selvages from the said strip.

As in the preceding embodiments, this strip is cut transversely by a guillotine device 40, controlled automatically by haul-off rolls 76 which are adjusted
20 to obtain plates 77 of a determined length.

In these examples of embodiment of the invention, any one device or other can be replaced by another device which, as a whole, performs the same function. Thus, the press 31 could be replaced by a
25 calender equipped with several pairs of rolls ensuring a progressive decrease in the temperature of the sandwich, or by a calender made up of a single pair of thermostated rolls, followed by twin belts ensuring the movement and the cooling of the said sandwich.

30 The process according to the invention and its implementation which have been described above make it possible to produce continuously composite plates in which the glass thread content can reach and exceed 60 % by weight.

35 Thus, by way of example, composite plates have been produced in the following conditions by employing a production line as illustrated by Figure 3.

The fabrics employed have a balanced 2 twilled 2 bound weave of 650 g/m² including 4 identical weft and weave rovings. These rovings comprise 800 glass filaments with a mean diameter of 17 micrometres and 5 800 polypropylene filaments with a mean diameter of 22 micrometres. The sheet of chopped commingled threads is made up from the same rovings.

A first strip of fabric (61) 1.4 metres in width, is unwound and deposited on the conveyor (19) 10 which travels at the speed of 2 metres per minute.

The cutters (59) placed above the conveyor (19) deliver 8 kilogrammes of chopped threads per minute. These chopped threads, 38 millimetres in length, are deposited onto the strip (61) and form a sheet of 15 2.8 kilogrammes per square metre.

A second strip of fabric (65) is unwound and deposited onto the sheet thus formed.

The sandwich (69) thus formed runs into the oven (30) heated to 200°C by means of hot air 20 circulation. On leaving the oven (30) the sandwich (69) is compressed with the aid of the two water-cooled rolls (71). The sandwich, the thickness of which is then approximately 5 millimetres, enters the belt press (31). In the first zone of this press, included between 25 the pairs of rolls (34, 36) and (72, 73), which are heated, the sandwich is heated to a temperature of the order of 230°C. In the second zone of this press, included between the pairs of rolls (72, 73) and (35, 37), the latter pair being cooled, the sandwich is 30 progressively cooled to a temperature of the order of 30°C. During the passage of these two zones the sandwich is subjected to a pressure of the order of 1.5 bar. A planar product, the thickness of which is approximately 3 millimetres, leaves the press (31) and 35 is trimmed and then cut up in the form of plates. A one-square metre plate weighs approximately 4.2 kilogrammes.

In the graph shown in Figure 4 are plotted, as ordinate, the values of the tensile and flexural strengths, expressed in megapascals, of various glass-polypropylene composite products whose glass content, expressed in percentages by weight and by volume, is plotted as abscissae.

The products whose glass content has a top value of 50 % by weight are obtained by continuous manufacturing processes of the prior art; those in which the glass content is equal to 60 % by weight are obtained by the process according to the invention.

The continuous manufacture processes of the prior art combine glass threads and polypropylene films by heating and compression.

In the final product these glass threads can be present either in the form of a mat of chopped threads (shown as x) or in the form of a mat of continuous threads (shown as O,•).

The values of the tensile strengths of the products obtained according to the present invention (shown as ①) relate both to products manufactured solely from fabrics, themselves exclusively consisting of commingled threads, and to products manufactured solely from chopped commingled threads (C33 - length 33 millimetres) and to mixed products such as that whose manufacture has been described, by way of example, above (30 % fabrics; 70 % C38 threads).

Independently of the fact that the process according to the invention makes it possible to obtain continuously composite products in which the glass content is higher than that in the products obtained according to the known processes, the extrapolation of the straight lines passing through the values of the strengths of the known products shows that the strengths of the products according to the invention are at least equal to, or even higher than, those which it would be rightful to expect merely as a result of the increase of the glass content. This shows that the

quality of the wetting of the glass threads by the thermoplastic organic material reaches an exceptional level.

5 The products obtained by the process according
to the invention are particularly well suited for
obtaining, by moulding or by stamping, articles of
complex shape like, for example, the very numerous
composite components that form part of the design and
the manufacture of motor vehicles. In this respect, the
10 mixed products combining fabrics and chopped or
continuous threads simultaneously combine the good
distribution of the reinforcement in a mould of complex
shape and the high level of mechanical properties which
are required of the component which is produced.

CLAIMS

1. Process for the manufacture of a composite product obtained by the association of glass threads
5 and of a thermoplastic organic material in the filamentary state, which consists:

- in continuously depositing onto a moving substrate glass threads of which at least 80 % by weight thereof are commingled threads consisting of
10 glass filaments and of filaments of thermoplastic organic material which are intimately blended, the quantity of glass deposited representing more than 40 % by weight of the total quantity of material deposited in the form of glass threads and of organic material,

15 - in transferring this glass threads-organic material combination into a number of zones where the said combination is heated, compressed and cooled, the heating and/or the cooling of the said combination being simultaneously accompanied by its compression,

20 - in cutting up the said combination in the form of plates or in winding it onto a rotating drum.

2. Process according to Claim 1, characterized in that the substrate is a strip of fabric formed by glass threads of which at least a portion thereof are
25 commingled threads consisting of glass filaments and of filaments of thermoplastic organic material.

3. Process according to Claim 1, characterized in that the substrate is a conveyor.

4. Process according to any one of the preceding
30 claims, characterized in that the glass threads and the material which are deposited are exclusively in the form of at least one strip of fabric and/or of knit formed at least partially by commingled threads.

5. Process according to any one of Claims 1 to 3,
35 characterized in that the deposited material is exclusively in the form of chopped threads.

6. Process according to any one of Claims 1 to 3, characterized in that the deposited material is exclusively made up of continuous threads.

7. Process according to any one of Claims 1 to 3, characterized in that at least one strip of fabric and/or of knit which are formed at least partially of commingled threads is deposited onto the substrate and in that at least one sheet of commingled threads, chopped or continuous, is also deposited, the said sheet(s) being brought into contact with at least one of the faces of the said strip(s), and then the sheet(s) of threads-strip(s) of fabric and/or knit combination thus formed is heated and is compressed on its two faces before being cooled and cut up or wound.

8. Process according to Claim 7, characterized in that:

- a) - a sheet of chopped commingled threads is deposited onto a moving conveyor,
- b) - a strip of fabric formed exclusively by commingled threads is deposited onto the said sheet,
- c) - a second sheet of chopped commingled threads is optionally deposited onto the strip of fabric,
- d) - the sheet(s)-strip(s) combination thus formed is transferred into a first zone where the said combination is heated and then into a second zone where the said combination is simultaneously compressed and heated,
- e) - the said combination is then transferred into a third zone in which it is compressed and cooled,
- f) - the said combination thus cooled is cut up at the exit of the third zone.

9. Process according to Claim 7, characterized in that:

- a) - a first strip of fabric formed exclusively by commingled threads is deposited onto a moving conveyor,
- b) - a sheet of chopped commingled threads is deposited onto this strip,

- c) - a second strip of fabric exclusively formed by commingled threads is deposited onto this sheet,
- d) - a second sheet of chopped commingled threads is optionally deposited onto this latter strip of fabric,
- 5 e) - the strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone where the said combination is simultaneously compressed and heated,
- 10 f) - the said combination is transferred into a third zone in which it is compressed and cooled,
- g) - the combination thus cooled is cut up at the exit of the third zone.

10. Process according to Claim 7, characterized in that:

- a) - a first strip of fabric formed exclusively by commingled threads is deposited onto a moving conveyor,
- b) - one or more continuous commingled threads are deposited onto this strip,
- 20 c) - a second strip of fabric formed exclusively by commingled threads is deposited onto the said continuous thread(s),
- d) - one or more continuous commingled threads or a sheet of chopped commingled threads is optionally
- 25 deposited onto this latter strip of fabric,
- e) - this strip(s)-sheet(s) combination thus formed is transferred into a first zone where the said combination is heated, and then into a second zone where the said combination is simultaneously compressed
- 30 and heated,
- f) - the said combination is transferred into a third zone in which it is compressed and cooled,
- g) - the combination thus cooled is cut up at the exit of the third zone.

35 11. Process according to any one of Claims 7 to 10, characterized in that the width of the sheet(s) of commingled threads is equal to the width of the

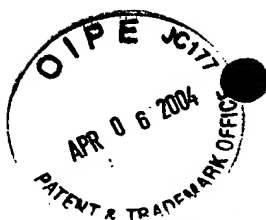
strip(s) of fabric and/or of knit with which it is (they are) combined.

12. Process according to any one of the preceding claims, characterized in that the weight of glass which
5 is deposited represents at least half of the total weight of material deposited onto the conveyor.

13. Device for implementing the process according to either of Claims 8 and 9, characterized in that it includes: a storage device for windings of commingled
10 threads, a cutter fed with the continuous threads extracted from the said windings, one or more devices ensuring the transfer, the storage and the distribution of the chopped commingled threads in the form of sheet(s), at least one device with a small barrel
15 supporting at least two rolls of fabric of commingled threads, a conveyor onto which the said chopped threads and the strip(s) of fabric are deposited, a preheating oven placed at the end of the conveyor, a twin-belt press comprising heating drums in its upstream portion,
20 cooled rolls in its downstream portion and, in its central portion, a heating zone followed by a cooling zone, and, lastly, an automatic guillotine device.

14. Device for implementing the process according to Claim 10, characterized in that it includes: a
25 storage device for windings of commingled threads, a conveyor onto which the commingled threads are deposited in the form of strips of fabric and of continuous threads and, optionally, of chopped threads, upstream of the said conveyor a first device with a
30 small barrel supporting at least two rolls of fabric, above the conveyor one or more devices for distribution of continuous commingled threads, downstream a second device with a small barrel supporting at least two rolls of fabric followed optionally by a second device
35 for distribution of continuous thread or by a cutter and by a device for distribution of chopped threads, a preheating oven placed at the end of the conveyor, a twin-belt press comprising heating drums in its

upstream portion, cooled rolls in its downstream portion and, in its central portion, a heating zone followed by a cooling zone, and, lastly, an automatic guillotine device.



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OSMM&N File No. 1247-0709-3VF PCT

Dept.: E/M

By: GJM/AY/fm

Serial No. 08/913,518

In the matter of the Application of: Jean-Paul DEBALME, et al.

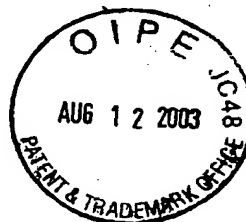
For: PROCESS AND DEVICE FOR THE MANUFACTURE OF A COMPOSITE MATERIAL

Due Date: 8-12-03

The following has been received in the U.S. Patent Office on the date stamped hereon:

- ☐ Check for \$1,060.00
- ☐ Cover Letter
- ☐ Request for Reconsideration
- ☐ Petition for Extension of Time (3 months)
- ☐ Petition Under 37 C.F.R. §1.182
- ☐ Declaration Under 37 C.F.R. §1.132 (3 pages)
- ☐ A page from a French dictionary (1 sheet)

☐ Dep. Acct. Order Form



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COURTESY
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1247-0709-3VF PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
Jean-Paul DEBALME, et al. : EXAMINER: AFTERGUT, J
SERIAL NO: 08/913,518 :
RCE FILED: January 14, 2003 : GROUP ART UNIT: 1733
FOR: PROCESS AND DEVICE FOR THE
MANUFACTURE OF A COMPOSITE MATERIAL

PETITION UNDER 37 C.F.R. §1.182

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

SIR:

Pursuant to the discussions held during the personal interview of May 15, 2003, Applicants hereby submit a Petition under 37 C.F.R. §1.182, requesting the Examiner to consider mistranslations in the English translation of the French specification originally filed January 17, 1997 under 35 U.S.C. §363. As evidenced by the declaration filed herewith under 37 C.F.R. §1.132, Applicants submit that the English translation subsequently submitted under 35 U.S.C. §371 contains mistranslations of the descriptions disclosed in the French specification submitted for the PCT international application under 35 U.S.C. §363, and request consideration of support for the previous amendments filed August 15, 2002 to the English translation.

In view of the declaration submitted herewith, it is respectfully requested that this
Petition under 37 C.F.R. §1.182 be granted.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

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1247-0709-3VFPCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF:

DEBALME, Jean-Paul et al.

: EXAMINER: AFTERGUT, J

SERIAL NO: 08/913,518

FILED: November 4, 1997

: GROUP ART UNIT: 1733

FOR: METHOD AND DEVICE FOR THE

MANUFACTURE OF A COMPOSITE MATERIAL

DECLARATION UNDER 37 C.F.R. 1.132

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

The undersigned, DEBALME Jean-Paul, herein declares as follows:

1. That I am one of the inventors named in this application.
2. That I am presently employed as an engineer by the assignee of record of the Application, VETROTEX France S.A. (hereinafter "VETROTEX).
3. That I received a degree of Engineer from the Ecole Nationale Supérieure des Arts et Métiers - Paris (France) in 1966. I have since 1969 been employed at VETROTEX as an engineer.

JPD

JPD



4. That I am familiar with both the French specification of the international application originally filed under the Patent Cooperation Treaty and its English translation subsequently filed under 35 U.S.C. §371.

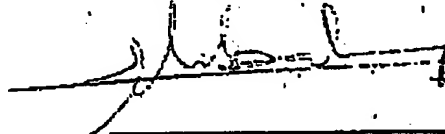
5. That the international application in French discloses the French word "plaque" in page 3, lines 12, 16, page 7, lines 2, 5, page 8, line 2, page 9, lines 16, 18, page 10, lines 13, 17, page 11, line 31, page 12, line 9, 11, page 13, line 7. The definition of "plaque" is given in the reference "Grand Larousse, vol. 4, p. 2418 (1987) as follows: "une feuille de matière quelconque, pleine, large et peu épaisse, mais rigide" (emphasis added with underline). The French word "pleine" with respect to material according to the same reference means "qui est fait dans un matériau qui ne comporte pas de vide" (emphasis added with underline). The underlined phrase "pas de vide" literally translates to "no empty space".

6. That the international application in French discloses that the "plaque" mentioned above under 5. may be obtained from a "produit plan" in page 13, line 6. The definition of the adjective "plan" is given in the reference "Grand Larousse, vol. 4, p. 2414 (1987) as follows: "qui est plat, uni, sans inégalités de niveau" (emphasis added with underline). The French word "uni" literally translates to "even". Therefore, the specification adequately provides support and description for the claimed subjected matter in such a way to reasonably convey to one skilled in the relevant art that the inventors had possession of the claimed subject matter at the time the present application was filed.

7. The undersigned declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or

imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

DEBALME Jean-Paul

A handwritten signature in dark ink, appearing to read 'J. Debalme', is written over a horizontal line.

Date 2003 August 6

Attachment: Grand Larousse en 5 volumes, Ed. Larousse, vol. 4; p. 2418, 2414 (1987).

plaide

1. **PLAID** (plé) a. m. (lat. *placitum*). 1. Assemblée politique ou judiciaire de l'époque franque. — 2. Au cours du Moyen Âge, conseil consultatif ou judiciaire d'un roi, grand noble, prêtre ou abbé. — 3. Décision ou jugement formels par ces assemblées ou conseils. — 4. *Cour des plaids communs*, la première des trois cours de « Common Law » dérivées de la *Curia regis* de l'Angleterre médiévale. || *Plaid général*, assemblée annuelle juridique et politique, de caractère consultatif, de la monarchie carolingienne. (Syn. *Assemblée de mai*.) || *Plaids de la porte*, juridiction gracieuse, établie à l'époque de Saint Louis, où quelques familles de la suite du roi recevaient à la porte du palais les requêtes des parties et, après un essai de conciliation, faisaient rapport au roi, qui tranchait le litige. (Ces personnalités prirent au XIV^e s. le nom de « maîtres de requêtes ».) || *Service de plaids*, obligation pour un vassal de participer à l'activité judiciaire de son seigneur.

2. **PLAID** (plé) a. m. (angl. *plaid*). 1. Grande pièce de tissu de laine tenant lieu de manteau dans la costume national écossais. — 2. Couverture en tissu écossais tranchée à ses extrémités.

PLAIDABLE a. Qui peut être plaide.

PLAINDANT a. Qui plaide.

PLAINDRE v. 1. (de *plaid* 1) [con]. a. 1. Défendre oralement une cause, une partie, un accusé devant une juridiction ; soutenir un procès. — 2. Présenter des arguments pour appuyer ou attaquer qqch. qdch. || *Plaidier pour le respect des droits de l'homme*. — 3. Être favorable à qqch. qdch. ; || *Vous conduisez ne plaidez pas en votre faveur*. — v. 1. En procédure, exposer oralement les prétentions formulées dans les conclusions. — 2. Invoquer qqch. comme moyen de défense, chercher à s'en prévaloir : || *Plaidier la légitime défense*. || *Plaidier capable*. — 3. *Plaidier la cause de qqch. qdch.*, porter en leur faveur, prendre leur défense ; constituer une présomption favorable. || *Plaidier le faux pour servir le vrai*, dire à qqch. qdch. de faux pour tirer de lui la vérité.

PLAIDFUR, **EUSE** n. 1. Partie à un procès, en qualité de demandeur, de défendeur ou d'intervenant. — 2. Vx. Personne qui aime à plaider, chicanier.

Plaideurs (lex), comédie en 3 actes et en vers de Racine (1688), inspirée des *Gulpes* d'Aristophane : une satire des plaideurs incorrigibles et des juges maniaques.

PLAIDOIRE n. f. (anc. fr. *plaidoir*, *plaidier*). 1. Action de plaider. — 2. Exposé oral, par un avocat, des prétentions formulées dans les conclusions. — 3. Défense orale, par leur avocat, de chacune des parties. — 4. Corps de *plaidoirie*, élément constitutif d'un dossier de plaidoirie argumentant sur les divers points de droit d'une affaire.

PLAIDOYER n. m. (anc. fr. *plaidoyer*, *plaidier*). Discours ou écrit en faveur de qqch. d'une idée, etc., ou qui combat une doctrine, une institution. || *Plaidoyer contre la peine de mort*.

PLAIE n. f. (lat. *plaga*). 1. Rupture du revêtement cutané intéressant la peau et les apophyses et pouvant s'accompagner de lésions d'autres organes. (Les principaux types de plaies sont les piqûres, les coupures et les plaies contuses.) — 2. Entaille, déchirure des tissus des végétaux comme laquelle la plante réagit en formant un suber cicatriciel puis un cœl. — 3. Litt. Blessure morale : || *Souffrir d'une plaie secrète*. — 4. Enforcer, remuer le couteau, le fer dans la plaie, raviver par son attitude la peine, le dépit, le remords de qqch. || *Porter le fer dans la plaie*, appliquer un remède brutal à un mal, à une situation difficile. || *Fam. Quelle plaie ! C'est une (vraie) plaie !*, quel ennui, quel fléau ! || *Plater d'Égypte*, série de lécques que, d'après la Bible (Exode, vii-xi), Dieu envoya sur l'Égypte pour amener le pharaon à laisser partir les Hébreux (eau du Nil changée en sang ; invasions de grenouilles, de moustiques et de mouches, épizootie ravageant les troupeaux ; ulcères couvrant le corps des hommes, orage détruisant les récoltes ; sauterelles achevant l'œuvre de l'orage ; ténépères couvrant le pays ; mort du premier-né de chaque famille égyptienne).

PLAIGNANT, **E** adj. et n. Qui porte plainte en justice.

PLAIN, **E** adj. (lat. *planus*, uni). Ecu plain, écu d'un seul émail, qui ne porte aucune figure.

PLAIN-CHANT n. m. (pl. *plains-chants*). Terme utilisé à partir du XIII^e s. pour dési-

gner le chant monodique d'Eglise sur texte liturgique, et communément admis comme équivalent de *chant grégorien*.

PLAINdre v. 1. (lat. *plangere*, se frapper la poitrine) [con]. 80. 1. Éprouver pour qqch. de la compassion, considérer qqch. avec un sentiment de pitié : || *Je te plains d'avoir à tes supporters toute la journée*. — 2. Ne pas être à plaindre, être dans une situation avantageuse, aisée. || *Ne pas plaindre sa peine, son temps, etc.*, consacrer beaucoup d'efforts, de temps, etc., à qqch.

— se plaindre v. pr. 1. Exprimer sa souffrance ou sa peine par des plaintes : || *J'entends le malade se plaindre dans sa chambre*. — 2. Exprimer la peine, la douleur qu'on éprouve, en cherchant auprès d'autrui la compassion, le soulagement, un remède : || *Se plaindre de maux de tête*. — 3. Exprimer (à qqch.) son mécontentement ou sa protestation au sujet de qqch. de qqch. : || *Se plaindre de la vie chère*. || *Plaint me plaindre à la direction*. — 4. Râler, rouspéter : || *Il passe son temps à se plaindre*. — 5. De quoi vous plaingez-vous ? que voulez-vous de plus ? || *Ne pas se plaindre*, s'estimer satisfait de son sort, de ce qui arrive.

1. **PLAINNE** n. f. (de *plain*). 1. Étendue caractérisée par une topographie faiblement différenciée, sinon plane, à drainage superficiel. — 2. Autre désignation des centrines de la Convention, appelées aussi le Marais (avec majuscule). — 3. *Plaine abyssale*, partie profonde (entre 5 000 et 6 000 m) des bassins océaniques dont le fond éboulé, sensiblement plan, horizontal ou peu incliné, s'appuie sur la croûte océanique. || *Plaine bathyale*, variété de plaine abyssale enfermée à l'intérieur d'une mer marginale et de profondeur moindre (env. 3 000 m). || *Haute plaine*, étendue de faible relief et d'altitude relativement élevée, dominée par des chaînons montagneux (Andes, Magreb, etc.).

2. **PLAINNE** n. f. Syn. de *PLANE* 1.

Plaines (*Indiens des*), Indiens qui se répartissent dans les plaines à l'ouest du Mississippi. Au début du XVIII^e s., beaucoup de tribus des plaines du Nord se tournèrent vers un nouveau style de vie, organisé autour de la chasse au bison. Les sociétés des Plainnes repoussèrent sur les associations guerrières. Les chefs étaient élus temporairement en fonction d'une situation donnée (guerre ou chasse). Le reste du temps, le groupe se conformait aux conseils des anciens.

PLAINNE-SAINT-DENIS (la) [53120], partie fortement industrialisée de la comm. de Saint-Denis (Seine-Saint-Denis), en bordure de Paris.

PLAIN-PIED (DE) loc. adv. et adj. 1. Se dit d'un logement construit sensiblement au niveau du sol extérieur, d'un logement dont toutes les pièces sont de même niveau. — 2. Directement, sans transition, sans difficulté de compréhension : || *Entrer de plain-pied dans le vif du sujet*. — 3. Être de plain-pied avec qqch. avoir avec lui des relations faciles et naturelles.

PLAINTE n. f. (de se plaindre). 1. Parole, cri, gémissement qui exprime la douleur, la peine : || *Les plaintes d'un blessé*. — 2. Litt. Bruit long, monotone et triste : || *Les plaintes du vent*. — 3. Expression de mécontentement : || *Cette mesure a suscité des plaintes*. — 4. Dénonciation d'une infraction par la personne qui en a été la victime. (— *moyen*.) — 5. Porter plainte contre qqch. demander l'intervention de la justice contre qqch. en raison du préjudice subi de son fait.

— **ENTRER DE** la plainte orale, reçue par un officier de police judiciaire qui en dresse procès-verbal, est transmise au procureur de la République ; la plainte écrite est adressée à ce dernier ou, si elle contient une constitution de partie civile, au juge d'instruction. Hormis ce cas, elle n'obtient pas le ministère public à poursuivre.

PLAINTIF, **IVE** adj. (de *plainte*). 1. Qui traduit une douleur, une peine : || *Ton plaintif*. — 2. Litt. Qui produit des sons semblables à des gémissements : || *Le bruit plaintif du vent dans les branches*.

PLAINTIVEMENT adv. D'une façon plaintive, d'un ton plaintif.

PLAINRE v. 1. ind. (anc. fr. *plainre*, du lat. *placere*) [con]. 110. 1. Convaincre aux goûts de qqch. lui être agréable, lui faire plaisir : || *Il ne fait que ce qui lui plaît*. || *Il ne m'a pas plu*. — 2. Exalter sur une personne un attrait, la séduire, éveiller l'amour, le désir : || *Cette fille plaît aux*

hommes mûrs. — 3. Faire plaisir à qqch., le louer : || *Un voyage en Italie me plaitrait bien*. — 4. Comme il vous plaitra, comme vous voudrez. || *Il plaît à qqch. de qqch. trouve bon de, aime à*. || *Il me plaît d'agir ainsi*. || *Plaire*, formule utilisée devant les tribunaux dans la rédaction des conclusions, plaids, etc. || *Plait-il ?*, se dit pour faire répéter ce qu'un mal entendu. || *S'il vous plaît*, formule de politesse dont on fait précéder ou suivre une demande : || *Donnez-moi du feu, s'il vous plaît* ; avec ironie pour accompagner un ordre : || *Serrez et touez de suite, s'il vous plaît* ; en langue fam., insinuer formellement sur un détail remarquable : || *Un repas au champagne, s'il vous plaît* ; — se plaire v. pr. 1. Éprouver de l'aise, l'aise pour l'autre : || *Ils se plaisent, cela se voit*. — 2. S'apprécier soi-même, être content de soi : || *Je ne me plais pas avec les chevaux longs*. — 3. Aimer à être avec qqch. ou dans un endroit : || *Se plaire à la campagne*. — 4. Se développer particulièrement dans un lieu : || *Le bouleau se plaît dans les pays froids*. — 5. Prendre plaisir à faire qqch. : || *Il se plaît à mystifier son entourage*.

PLAISANCEMENT adv. 1. D'une manière plaisante, agréable ou en plaisantant : || *Contez plaisamment des anecdotes*. — 2. D'une manière ridicule, qui fait rire : || *Être plaisamment habillé*.

PLAISANCE n. f. (de *plaisant*). 1. De plaisance, se dit de la navigation pratiquée pour le loisir, le sport, et de ce qui s'y rapporte : || *Port de plaisance*. — 2. La plaisance, la navigation de plaisance.

PLAISANCE (32160), ch.-l. de cant. du Gers, sur l'Adour : 1 577 hab. (*Plaisantus*). Anc. bastide. Eaux-de-vie. Conserverie. Mûrier.

PLAISANCE, en ital. *Plaisance*, v. d'Italie, en Emilia, ch.-l. de prov., près du confluent de la Trebbia et du Po : 107 000 hab. Centre commercial. Industries alimentaires.

— **PLAISANCE**, ancienne colonie romaine (216 av. J.-C.). Plaisance se constitua en commune au XII^e s. Elle fut vaincue par l'empereur Frédéric Barberousse (1181) et le comté fut ensuite au sein des deux Ligues lombardes, constituées en 1167 et 1226. Après avoir été un temps dépendante de Milan (1448-1511), elle forma avec Parme un duché. — **PLAISANCE**, cathédrale romane et gothique. Palais communal gothique sur la place du Caval (statues équestres de deux ducs Farnèse, 1620-1625). Églises du XVI^e s. Palais Farnèse, en partie par Vignole (musée communal). Galerie Albertoni (peintures et tapisseries) et galerie d'Art moderne.

PLAISANCE (duc de) — **LEZARD**.

PLAISANCE-DOUCH (31170) Tournefeuille), comm. de la Haute-Garonne, à l'O.-S.-O. de Toulouse, sur le Touch : 5 817 hab. Bastide de la fin du XIII^e s.

PLAISANCIE n. m. (de *Plaisance*, n. pr.) Syn. de *ASTICE*.

PLAISANCIER, **ÈRE** adj. Relatif à la navigation de plaisance.

— n. Personne qui pratique la navigation de plaisance.

PLAISANT, **E** adj. (de *plaire*). 1. Qui est agréable, qui produit de l'agrément ; charmant : || *Un lieu de vacances très plaisant*. — 2. Qui divertit, qui fait rire ; drôle : || *Adopter un ton plaisant*. — 3. Qui est singulier, risible ; bizarre : || *Il est plaisant de le voir ainsi s'excuser*.

— **PLAISANT**, n. m. 1. Litt. Celui qui fait rire, cherche à faire rire. — 2. Côté comique de qqch. — 3. Mauvais plaisant, personne qui fait des plaisanteries de mauvais goût.

PLAISANTER v. 1. (de *plaisant*) [con]. 31. 1. Dire ou faire des choses pour amuser, divertir : || *J'ai trop d'ennuis ; je n'ai pas envie de plaisanter*. — 2. Faire ou dire qqch. qu'on ne prend pas au sérieux : || *Je plaisante, ce n'est pas vrai*.

— v. 1. ind. 1. Dire des plaisanteries sur qqch. : || *Plaisanter sur le chapeau ridicule de Marie*. — 2. Ne pas plaisanter (sur, avec qqch.), être sévère, strict, intransigeant sur qqch. : || *Prendre qqch. très au sérieux ; Il ne plaisante pas avec l'exactitude*.

— v. 1. Rallier doucement qqch. sans méchanceté sur tel ou tel point : || *Quelquer ; On le plaisante sur sa maigre*.

PLAISANTERIE n. f. 1. Action de plaisanter, de s'amuser. Faire une chose par plaisanterie. — 2. Faroles ou actes destinés à faire rire, à amuser : || *Plaisanterie de mauvais goût*. — 3. Propos ou acte visant à se moquer, à ironiser sur qqch. qdch. : || *On faisait des plaisanteries sur sa maladresse*.

— 4. Chose peu sérieuse, sans importance ou très facile : || *C'est une plaisanterie de finir ce en une heure*. — 5. *Séverales plaisanteries*, faire, qui a des conséquences fâcheuses pour celui qui la subit. || *Relaxation, permise de plaisanterie*, catégorie de relations entre individus de certaines sociétés, qui leur prescrit un comportement de familiarité rapprochée.

PLAISANTIN n. m. 1. Personne qui aime à faire le plaisant et le fait sans esprit. — 2. Personne qu'on ne peut prendre au sérieux, qui ne mérite pas la confiance.

PLAISIR n. m. (anc. fr. *plaisir*, *plaire*, du lat. *placere*, plaire). 1. État de contentement que crée chez qqch. la satisfaction d'une tendance, d'un besoin, d'un désir : || *Cette musique lui procure un immense plaisir*. || *Éprouver du plaisir à lire*. — 2. Ce qui plaît, divertit, procure à qqch. ce sentiment agréable de contentement : || *Le plaisir de la table*. — 3. S'emploie dans des formules de politesse pour exprimer un quelconque consentement, agrément : || *Cher plaisir de voyager avec vous !* — 4. Jouissance sexuelle, volupté : || *Donner du plaisir à son partenaire*. — 5. Oublie roulé en cordon. — 6. A plaisir, selon son imagination, son caprice ; sans raison, sans motif sérieux ; beaucoup, sans retenue. || *Fam. Au plaisir (de vous revoir)*, formule lorsqu'on se quitte. || *Avec (grand) plaisir*, volontiers. || *Avoir, prendre (du) plaisir à qqch.*, y trouver de l'agrément, une satisfaction. || *Car tel est notre plaisir*, formule fixée par Louis XI (décret du 11 oct. 1472) et apposée au bas des actes royaux pour affirmer le pouvoir absolu du roi. || *Faire à qqch. le plaisir de*, exprimer un souhait impératif ou un ordre : || *Fais-moi le plaisir de ranger ce disque*. || *Faire plaisir à qqch.*, lui être agréable. || *Le bon plaisir de qqch.*, se familiarise, son caprice. || *Se faire un plaisir de*, le faire très volontiers. || *Principe de plaisir*, dans la psychanalyse freudienne, principe organisateur du fonctionnement psychique et selon lequel l'individu ne tend qu'à la satisfaction, donc à l'évacuation, des quantités d'excitation qui affluent dans l'appareil psychique.

— **PLAISIRS** n. m. pl. 1. Côtés agréables de l'existence. — 2. Jouissances sexuelles : || *Mener une vie de plaisirs*.

PLAISIR (78370), ch.-l. de cant. des Yvelines, à l'O. de Versailles : 22 622 hab. Établissement hospitalier (psychiatrie). Industrie aéronautique.

1. **PLAN**, **E** adj. (lat. *planus*). 1. Qui est plat, uni, sans inégalités de niveau : || *Miroir plan*. — 2. Relatif au plan. — 3. Se dit d'une transformation relativement à un plan (symétrique plane) ou dans un plan (translation, inversion, similitude, pléon).

— 4. Se dit d'une courbe ou de toute autre figure contenue tout entière dans un plan.

2. **PLAN** n. m. (de *plan* 1). 1. Surface plane (entière, dans des loc.). || *En plan incliné*. — 2. Plan d'eau, niveau des eaux d'une rivière en un point donné ; partie d'une rivière ou d'un lac aménagée pour certains sports nautiques. — 3. *Plan incliné*, surface plane, oblique par rapport à l'horizontale, que l'on emploie pour diminuer l'effort nécessaire à l'ascension d'un corps ou la vitesse de sa descente ; dans une mine, descente ; ouvrage permettant le passage d'un bâtiment d'un hief à un autre, constitué par un bac rempli d'eau, supporté par des bogies se déplaçant sur des rails en pente. — 4. *Au premier plan*, sur la ligne la plus proche ; devant, dans l'espace ; au niveau le plus important. || *Au deuxième (second) plan*, à une place secondaire. || *Fam. Laisser en plan, renier en plan*, abandonner qqch. qdch. ne plus en occuper ; être laissé là, abandonné tel. || *Sur le même plan*, sur un autre plan, au même niveau, à un autre niveau dans une comparaison. || *Sur un plan*, sur le plan + adj., sur le plan de + n., dans tel domaine, de tel point de vue. || *Sur le plan de l'horizontale*, il est irréprochable. — **ARCHIT.** et **BÂT.** Dans certaines régions, de rez-de-chaussée ; dans d'autres régions, de *PLACE*. — **SCULPT.** Dans une peinture, un dessin, un relief, chacune des surfaces virtuelles verticales sur lesquelles semblent disposées personnes ou objets et qui correspondent à un certain degré de profondeur suggérée, du plus proche (premier plan) au plus reculé (arrière-plan), en passant par une série d'intermédiaires. — **CIN.** En *Télé*, fragment d'une film cinématographique constitué d'une suite continue d'images enregistrées par la caméra au cours d'une même prise. || *Gros plan ou plan serré*, plan qui montre